California Regional Water Quality Control Board

San Diego Region

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TO: **Attachment to Fact Sheet for tentative Order No. R9-2002-0002**

File #03-538.02
U.S. Navy, Naval Base Point Loma (NBPL)

FROM: **Paul J. Richter, WRCE**
SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD

DATE: **22 July 2002**

SUBJECT: Hull coating leachate, underwater hull cleaning (*underwater ship husbandry*), and radioactivity concerns mentioned during workshop on 27 June 2002

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This memorandum will be attached to the Fact Sheet for tentative Order No. R9-2002-0002. During the workshop for the Naval Base Point Loma, the interested parties discussed hull coating leachate, underwater ship husbandry, and radioactive discharges.

Regulation and monitoring of hull coating leachate, and underwater ship husbandry will not be included in the tentative Order. Hull coating leachate, and underwater ship husbandry will be regulated pursuant to the *Uniform National Discharge Standards for Vessels of the Armed Forces*.

Radioactive discharges are not subject to regulation by the Regional Board. The Navy and the Department of Energy have jurisdiction for discharges of radioactive material. The *Naval Nuclear Propulsion Program* has a quarterly monitoring program for radioactive discharges. The United States Environmental Protection Agency (USEPA) has also conducted a separate, one-time monitoring program for radioactivity.

The monitoring conducted by the *Naval Nuclear Propulsion Program,* and by the USEPA identified radioactivity at naturally occurring background levels, at levels from atmospheric nuclear testing, and at levels associated with the Chernobyl reactor accident in 1986. Low level cobalt radioactivity was found in one sediment core sample at the Submarine Base (SUBASE) at the Naval Base Point Loma complex. The radioactivity level found at SUBASE was not at a level that would pose a threat to the environment or human health.

Radioactivity monitoring will not be included in the tentative Order. The *Naval Nuclear Propulsion Program* conducts quarterly monitoring of

sediments, surface water, and marine life for its environmental monitoring program for the nuclear propulsion program. The Regional Board can review the *Naval Nuclear Propulsion Program* reports.

Provided below is a brief description of the documents reviewed and included in the Regional Board's administrative file regarding hull coating leachate, underwater ship husbandry, and radioactive discharges and monitoring.

Hull Coating Leachate

Phase I of the Uniform National Discharge Standards for Vessels of the Armed Forces (UNDS) has identified *hull coating leachate*, and *underwater ship husbandry* as discharges determined to require a *marine pollution control devise* (MPCD).

Hull coating leachate is the ablative discharge of anti-corrosion (AC) and anti-fouling (AF) paints from ship hulls to the surrounding waters. In the UNDS, Phase I study, three bays: San Diego, CA; Mayport, FL; and Pearl Harbor, HI, were analyzed and were included in calculations to determine the increase of copper concentrations from Navy Vessels for the respective Bay. The increase was based upon the calculated copper and zinc ablative discharges from the hull surfaces and upon the tidal prism of the respective Bay. The MPCD for hull coating leachate is being developed in Phase II of the UNDS.

For San Diego Bay, the increase of copper from hull coating leachate was calculated to be 0.19 µg/L. For San Diego Bay, the increase of zinc from hull coating leachate was calculated to be 0.074 µg/L (*Nature of Discharge (NOD) report, Hull Coating Leachate, Table 5. Estimated Copper and Zinc Contributions to Some Ports of the Armed Forces, . . .Technical Development Document.*)

Underwater ship husbandry discharges include underwater hull cleaning, propulsor (i.e., propeller) lay-up, welding, sonar dome repair, non-destructive testing, masker belt repair, and painting operations. These ship husbandry operations are normally conducted pierside.

Underwater hull cleaning and propulsor lay-up are the most frequent husbandry operations and have the highest potential for water quality impacts. The other ship husbandry operations were identified as having a low potential impact to water quality.

Divers using mechanical brush systems conduct underwater hull cleaning. According to the Phase I study, copper and zinc are released during the cleaning at concentrations that may exceed State water quality standards. The copper and zinc discharges are from the

AC and AF hull coatings. The UNDS has identified this discharge as needing MPCD. The underwater hull cleaning will be regulated as an *underwater ship husbandry discharge* pursuant to UNDS.

Propulsor lay-up requires the placement of a vinyl cover over the propulsor to reduce fouling of the propulsor when the vessel is in port for extended periods. Chlorine-produced oxidants are generated from impressed current cathodic protection systems and can buildup within the cover. The discharges from the propulsor lay-up are infrequent and low volume. The propulsor lay-up will be regulated as an *underwater ship husbandry discharge* pursuant to UNDS.

In UNDS, Phase II, the EPA and other federal and state organizations shall develop MPCD (performance standards) for the 25 identified discharges, which include underwater hull cleaning and underwater ship husbandry. The MPCD performance standards may include best management practices (BMP), administrative practices, or engineered systems.

In UNDS, Phase III, the MPCD performance standards will be codified. Upon the completion of UNDS, Phase III, the States or local political subdivisions, may not adopt or enforce any State or local statute or regulations with respect to the discharges identified as requiring MPCD, except to establish a no discharge zone (CWA §312(n)(6)).

Radioactivity

Navy Monitoring Program

The U.S. Navy has an environmental monitoring program to assess the effect of disposal of radioactive wastes from U.S. naval nuclear propulsion plants and their support facilities. The *Naval Nuclear Propulsion Program* monitoring program consists of analyzing sediment, surface water, and marine life samples for radioactivity associated with naval nuclear propulsion plants and their support facilities. The sampling is conducted quarterly. Additionally, shore facilities are continually monitored for airborne gamma-emitting radioactivity.

San Diego Bay is one of the harbors included in the Navy's nuclear monitoring program. The most current radiological monitoring results were published in *Environmental Monitoring and Disposal of Radioactive Wastes from U.S. Naval Nuclear-Powered Ships and Their Support Facilities, Report NT-02-01, March 2002.* The monitoring data was collected in 2001.

The radioactive material expected to be released and detected in the environment is cobalt 60 and other gamma-emitting radionuclides. In

and around the Point Loma SUBASE, the U.S. Navy monitored 25 sediment locations, 8 water sampling locations, and 2 marine life sampling locations. Numerous shore line locations were also monitored for airborne gamma-emitting radioactivity (see attached Figures 1 through 3).

According to the environmental monitoring data, the naval nuclear propulsion plants and their support facilities have not caused a measurable increase in the general background radioactivity in the surface water environment of San Diego Bay. Low level cobalt 60 radioactivity in a core sediment sample was identified at the SUBASE. The low level cobalt 60 radioactivity level was not considered a threat to the environment or human health.

USEPA Radiological Survey

The USEPA conducted a radiological survey of San Diego Bay. The results were published in *Radiological Survey of Naval Facilities on San Diego Bay, EPA-402-R-98-011, January 1999*. Conclusion #6, from the USEPA is copied below.

> *6. Based on this Radiological survey, practices regarding nuclear-powered warship operations at San Diego Harbor have resulted in no increases in radioactivity causing significant population exposure or contamination of the environment.*

The USEPA survey included surface water samples, harbor sediment and shoreline samples, sediment core samples, drinking water samples, and biota samples. These samples were taken at the U.S. Naval installations where nuclear propulsion vessels are located and where nuclear support facilities exist. Background sample locations were selected to be representative of levels of naturally occurring or existing radionuclides were present but not related to the U.S. Navy facilities. A total of 132 sample were collected. Many samples were split for independent comparisons by the Navy. For approximately 5% of each type of sample, a quality control duplicate sample was collected.

The USEPA survey also indicated that a sediment core sample from the piers at SUBASE contained low-level cobalt 60 radioactivity. The levels were not considered a significant threat to the environment or human health.

References

Environmental Monitoring and Disposal of Radioactive Wastes from Nuclear Powered Ships and Their Support Facilities; Report NT-96-1, March 1996; Report NT-97-1, March 1997; Report NT-98-1, February 1998; Report NT-99-1, March 1999; Report NT-02-01, March 2002.

Phase I, Uniform National Discharge Standards for Vessels of the Armed Forces, Technical Development Document, EPA 821-R-99-001, April 1999.

Occupational Radiation Exposure from U.S. Naval Nuclear Plants and Their Support Facilities; Report NT-98-2, February 1998; Report NT-99-2, March 1999.

Radiological Survey of Naval Facilities on San Diego Bay, EPA-402-98-011, January 1999.

The United States Naval Nuclear Propulsion Program, Over 114 Million Miles Safely Steamed on Nuclear Power, August 1998.

The United States Naval Nuclear Propulsion Program, Over 124 Million Miles Safely Steamed on Nuclear Power, March 2002.